

Abstract of the Disclosure

A semiconductor device which, even when a vertical transistor is adopted, is able to prevent a product yield from decreasing and performance from deteriorating, and at the same time, to achieve high-density integration of chips and high performance.

The semiconductor device include: a semiconductor substrate; a tower-like gate pillar formed on the semiconductor substrate via an insulation layer and including a channel region formed so as to be positioned between impurity diffusion regions in a layering direction; a gate insulation film formed on an outer surface of the gate pillar; and a gate electrode film formed on an outer surface of the gate insulation film; in which the gate electrode film is formed of multiple layers each formed in order from the gate pillar, in the direction where the gate electrode film is formed.